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*Drosophila* Survey of Hokkaido I. Description of a  
New Species, *Drosophila alboralis* sp. nov.  
(Subgenus *Hirtodrosophila*)<sup>1</sup>

With 14 Text-figures

Eizi MOMMA

Zoological Institute, Faculty of Science, Hokkaido University

and

Haruo TAKADA

Biological Laboratory, Otaru Fisheries School

(Communicated by S. MAKINO)

During recent years a considerable amount of attention has been given by the *Drosophila* geneticists to field observations of *Drosophila*, especially in connection with ecology, geographical distribution and wild populations. Since 1947, several collecting trips have been undertaken covering various localities in Hokkaido, the northernmost island of Japan, under the plan being conducted by Professor Sajiro Makino, Hokkaido University, for the purpose of making a *Drosophila* survey. These trips have resulted up to the present in the accumulation of considerable data pertaining to the geographical distribution of *Drosophila*, together with the finding of several unrecorded and new species. This paper is to report a new species of *Drosophila* obtained on these trips, with a detailed description of the characters.

A small number of the flies to be recorded here were collected for the first time in Asahidake, one of the Taisetsu Mountain group in July 1951. Because of their similarity in several body characters, the authors regarded these flies as belonging to an unrecorded species, allied to *Drosophila busckii* (DIS 26, p. 122). Since then, close survey has revealed

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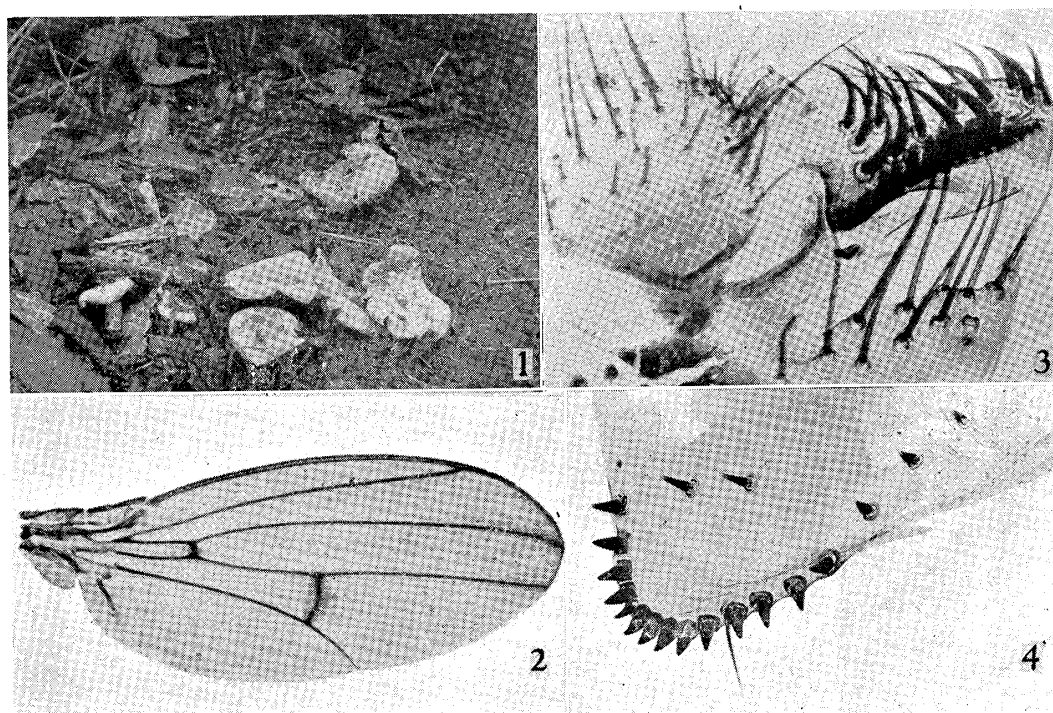
that the flies of this species live in rather rich population on fungi and wild grapes growing in both high and low lands. In the authors' experience, they have never been attracted to traps baited with banana or other fermenting fruits. Therefore, the collection of this species has been possible only by the use of the net.

In the course of a recent tour in the United States, Professor Makino visited the University of Texas, Austins, Texas, and showed the specimens of this species to Dr. M. R. Wheeler for examination and discussion. Dr. Wheeler kindly observed them with extreme interest and advised that they were new to science. In this paper the flies are named *Drosophila alboralis* according to the advice of Dr. Wheeler.

*Drosophila alboralis* sp. nov.

*External characters of imagines.*

Arista with 8 branches, two below in addition to the terminal fork. Antennae brownish-yellow, third joint brown. Front more than one-half



Figs. 1-4. 1. Place of residence of *D. alboralis*. Many specimens were collected on the fungus, *Russula delica*. 2, Wing. 3, Anal plate and primary clasper in the hypopygium. 4, Egg-guide.

width of head, wider below; dark brown, orbits and ocellar triangle shiny blackish brown. Upper face dark brown, contrasting with a broad white band across oral margin which is continuous with the

whitish cheeks. Middle orbital about  $1/3$  length of anterior and about  $1/2$  length of posterior. Only one prominent oral bristle. Carina narrow, brown. Clypeus black, contrasting with the white oral margin. Proboscis yellow. Palpi pale with several enlarged hairs. Cheeks whitish; their greatest width about  $1/3$  greatest diameter of eye. Eyes brilliant red with light-colored pile.

Acrostichal hairs in 6 rows. No prescutellars. Anterior scutellars divergent. Halteres pale yellow. Mesonotum dark reddish-yellow, with four longitudinal black stripes; two dorsocentral lines and the other two stripes running from just above the humerus to just above the wing. Scutellum brownish-yellow with large median dark area. Pleurae reddish-yellow, with brownish stripes running forward from the base of the wing. Sterno-index about 0.5. Legs yellow. Apical bristles on first and second tibiae; preapical bristles on third tibiae.

Abdominal tergites reddish-yellow, each of first to fifth segments with apical black band that reaches the posterior margin of the tergite on the sides of the abdomen. The basal black band is definitely narrowed in the mid-dorsal line; the black bands of the last two segments cover nearly the entire tergites. Sternites yellow.

Wings clear, veins yellow with both cross-veins clouded, posterior cross-vein rather curved (Fig. 2). Costal index about 2.4; 4th vein index about 1.9; 5x index about 1.3; 4c index about 1.0. Apex of first costal section with heavy bristles on the basal two-fifths to one half.

Body length about 2.7 mm. (in live specimen); wing about 2.5 mm.

*Genital apparatus.*

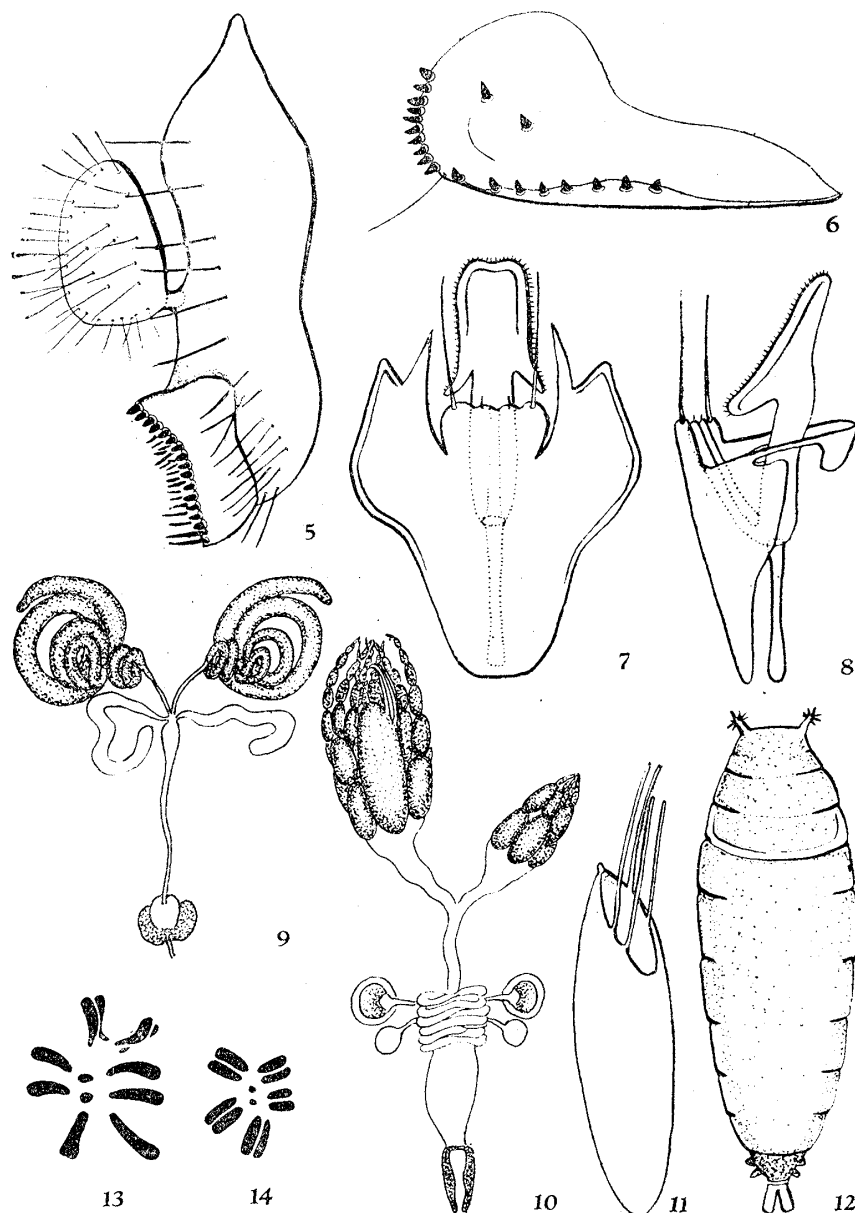
External genital apparatus: ♂. Anterior margin of genital arch strongly sinuate and chitinized, heel a very broad angle, toe pointed downward, at same level as heel; middle and lower portions of arch with about 15 bristles, upper portion 2. Anal plate with rear angle. Clasper one, primary teeth blunt, 15, arranged in a row on middle of outer margin, marginal bristles long stout, 18–19 (Figs. 3 and 5). The external portion of the aedeagus takes the shape of a dull spade (Figs. 7 and 8). ♀. Egg-guide is shown in Figs. 4 and 6.

Internal genital apparatus: ♂. Testes yellow or light orange with 2 inner and  $3\frac{1}{2}$  outer coils or gyres (Fig. 9). ♀. Spermathecae spherical, brownish-yellow in color, chitinized structure. Ventral receptacle with about 6 loops lying flat against the central surface of the uterus (Fig. 10).

*Other characteristics, relationship, and distribution.*

Eggs—4 rather slender filaments (Fig. 11).

*Puparia* — Reddish-brown with pale posterior spiracles, each of anterior spiracles with about 7 branches arranged in a circle; horn index about 15.0 (Fig. 12).



Figs. 5-14. 5, Hypopygium. 6, Egg-guide. 7, Ventral aspect of phallic organ. 8, Lateral aspect of phallic organ. 9, Male reproductive system. 10, Female reproductive system. 11, Egg. 12, Puparium. 13, Spermatogonial chromosomes. 14, Oogonial chromosomes. Drawings under various magnifications.

*Chromosomes* — Oogonial metaphase shows 12 chromosomes consisting of 5 pairs of rod-shaped elements and 1 pair of dot-like ones (Fig. 14). Observations of the spermatogonial metaphase reveal that the X-element

is represented by the largest rod, while the Y is shorter than the former (Fig. 13).

*Relationship*—A member of the subgenus *Hirtodrosophila*.

*Distribution*—The original specimens were collected in Mt. Taisetsu, Hokkaido, in July, 1952. In addition, many flies of this species were found in July to August of 1953, being distributed in various localities in Hokkaido such as Sapporo, Nopporo, Imagane.

They were abundant on various kinds of fungi (Fig. 1). There is considerable difficulty in raising the flies of this species, but culture stocks have been maintained in the Zoological Laboratory of Hokkaido University.

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#### LITERATURE CONSULTED

- Burla, H. 1951. Rev. Suisse Zool. **58**: 23-175.  
 Burla, H. und H. Gloor 1952. Z. Vererbungslehre **84**: 164-168.  
 Hsu, T. C. 1949. Univ. Texas Publ. No. **4920**: 80-142.  
 Kikkawa, H. and F. T. Peng 1938 Jap. Jour. Zool. **7**: 507-552.  
 Takada, H., E. Momma and S. Makino 1952. DIS **26**: 122-123.  
 Okada, T. 1953. Zool. Mag. **62**: 278-283.  
 Patterson, J. T. 1943. Univ. Texas Publ. No. **4313**: 7-214.  
 Patterson, J. T. and M. R. Wheeler 1942. Univ. Texas Publ. No. **4213**: 67-109.  
 ———— 1949. Univ. Texas Publ. No. **4920**: 207-233.  
 Sturtevant, A. H. 1942. Univ. Texas Publ. No. **4213**: 5-51.  
 Tan, C. C., T. C. Hsu and T. C. Sheng 1949. Univ. Texas Publ. No. **4920**: 196-206.  
 Wharton, L. T. 1943. Univ. Texas Publ. No. **4313**: 282-319.  
 Wheeler, M. R. 1949. Univ. Texas Publ. No. **4920**: 157-195.